*Observations on the chemical Nature of the Humours of the Eye. By* Richard Chenevix, *Esq. F.R.S. and M.R.I.A.* Read November 5, 1802. [*Phil. Trans.* 1803, *p.* 195.]

After a brief survey of what former physiologists, such as Bertrandi, Fourcroy, Wintringham, and Chrouet, have done in investigating the chemical history of the humours of the eye, in all which he found so considerable a disagreement, and so much obscurity, as to render a new analysis at least useful if not necessary, Mr. Chenevix proceeds to give us his own experiments. Of these, the first series was made on the eyes of sheep, and the second on the human eye; and they of course relate to the three humours, the aqueous, the crystalline, and the vitreous.

The specific gravity of the aqueous humour of the sheep's eye was found to be 10·090, taking that of water as 10·000; and from the results of various experiments, it appears to be composed of water, albumen, gelatine, and of a muriate the basis of which was found to be soda. The specific gravity of the crystalline was equal to 11·000, and was found to consist of a smaller quantity of water than the other humours, but of much larger proportion of albumen and gelatine; and no essential difference could be perceived between the vitreous humour and the aqueous, their specific gravities, as well as their several chemical properties, being the same.

From the examination of the humours of the human eye, Mr. Chenevix convinced himself that they are scarcely in any respect different from those of the sheep's eye. The aqueous and vitreous humours were found to contain water, albumen, gelatine, and muriate of soda; the latter ingredient alone being wanting in the crystalline. The specific gravities of the aqueous and vitreous humours were 10·053, and of the crystalline 10·790.

The specific gravity of the crystalline, compared with that of the aqueous and vitreous humours, being much greater in the human eye than in that of the sheep, our author bestows some pages on an inquiry concerning this phænomenon; the result of which is, that as the globe of the human eye is smaller than that of the sheep, and hence the distance from the cornea to the retina much shorter, nature, in order to preserve the achromatic effect of the eye, rendered the human crystalline proportionably more dense than in other animals. This illustration is confirmed by the examination of the eye of an ox, where the difference between the specific gravities of the humours was as 10·088 to 10·765.

In examining the eyes of birds, it was found, that, different from those of quadrupeds, the cornea, or the anterior part of the eye, is a portion of a larger sphere than the sclerotica, or posterior part of the ball. It is hence obvious that, in order to produce a proper refraction, it is necessary that the densities of the humours be essentially different. Accordingly, it was found that the specific gravity of the vitreous humour was 11·210; while that of the crystalline was no more than 10·392. Whence it appears, that the densities are here

actually inverted, in order to suit this structure of the eye. The humours of the eyes of birds are chemically of the same nature as those of quadrupeds.

It is also observed, that the crystalline in all animals is not throughout of the same density; the result of some experiments made on this subject being that its density increases from the circumference to the centre, as the square roots of the quantities pared away from the external part.

Lastly, it is suggested, that since we know that albumen can be coagulated by various methods, it is not unlikely that this may happen likewise in the human eye, and be the cause of disorder known by the name of Cataract. An attention to this complaint, especially in gouty persons, is strongly recommended; as some important conclusions, it is thought, may be drawn as to the influence of phosphoric acid in causing that disorder, by the common effect of acids in coagulating albumen.

*An Account of some Stones said to have fallen on the Earth in France; and of a Lump of native Iron, said to have fallen in India. By the Right Hon.* Charles Greville, *F.R.S.* Read January 27, 1803. [*Phil. Trans.* 1803, *p.* 200.]

Mr. Greville, conceiving that the experiments and observations made by Mr. Howard on certain metalline substances said to have fallen on the earth, and the accurate descriptions which Count de Bournon has given of these substances, have established the fact that a number of stones, asserted to have fallen under similar circumstances, have precisely the same character, is here pleased to communicate to the Society three more instances of such singular productions of nature, which have of late been noticed in France.

The first is a specimen broken from a stone of about 15 inches diameter, preserved in the Museum of Bourdeaux, and which is said to have fallen near Roqueford, in the Landes, on the 20th of August, 1789, during the explosion of a meteor. It broke through the roof of a cottage, and killed a herdsman and some cattle.

The second is part of a stone preserved in the collection of Mons. St. Amand, which was one of the numbers that fell in the year 1790, in three different parishes in Armagnac, some of which weighed no less than 25 pounds. The fact of this shower of stones was at the time verified by the Mayor of Armile, and is published in the *Journal des Sciences Utiles de Montpellier* for that year. For the third specimen Mr. Greville is indebted to the Marquis de Drée. It is a fragment broken from a stone of 22 pounds weight, which fell near Villefranche, in Burgundy, the 12th of March, 1798. This, like the former ones, was accompanied by a meteor; and all three have precisely the same character, texture, and appearance.

We are indebted to Mr. Greville for a new evidence, and he says, the only one he has yet met with, that seems to ascertain the origin of native iron, which, from analysis, had been suspected to have a